

HK532

ENCODER/DECODER IC

ENCODER WITH 531441 SET CODE

Features

- * CMOS technology
- * 12 address pins can be tri-state (VDD ,VSS or Floating) input
- * Latch and momentary two types be available

- * Wide range operating voltage, Vcc = 3 -12V
- * Up to six data bits
- * High noise immunity

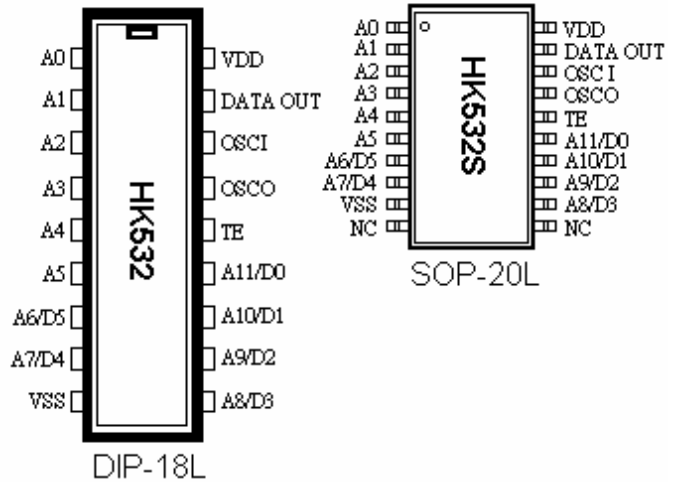
General Description

HK532 is a RF remote control encoder paired with HK532A. It utilizes CMOS technology. The chip has 12 bits of 3-state address pins that provides 3¹² codes. HK532/HK532A pair is suitable for use on remote controller.

Application

- * Car Security
- * Garage Door
- * Ceiling Fan
- * Home Security/Automatic
- * Toys

PinOut Diagram



Pin Assignment

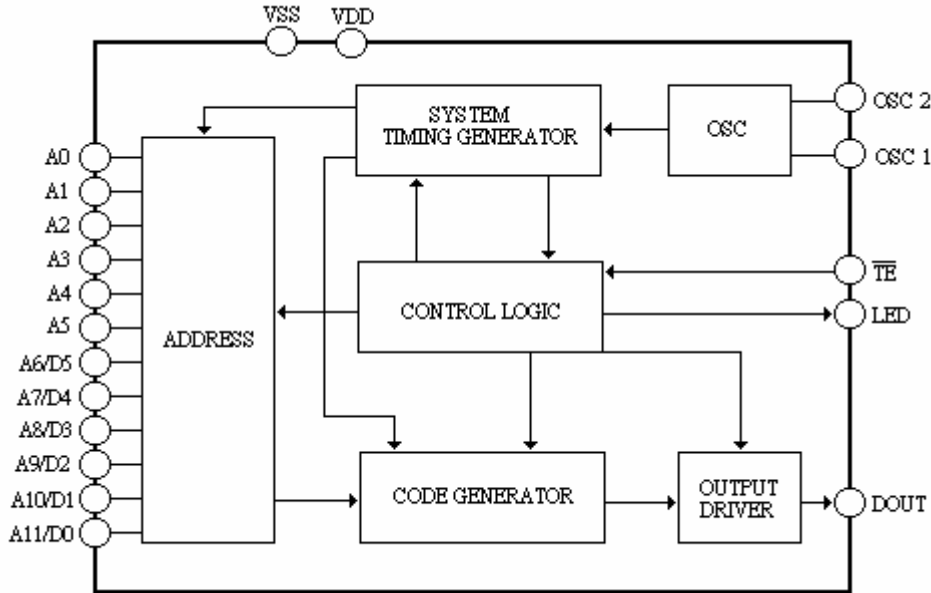
PIN NAME	PIN NO(DIP form)	PIN NO (SOP form)	FUNCTION	
A0	1	1	Address input, each pin can be set to VDD , VSS , or floating	
A1	2	2		
A2	3	3		
A3	4	4		
A4	5	5		
A5	6	6		
A6/D5	7	7	Address/data input.	
A7/D4	8	8	Address/data input.	
VSS	9	9		Negative power supply.
A8 / D3	10	12		
A9 / D2	11	13		
A10 / D1	12	14	Enables transmission.	
A11 / D0	13	15		
TE	14	16	Resistor connected between these two pins determine the system clock.	
OSC2	15	17		
OSC1	16	18	Serial output of encoded signals.	
Dout	17	19		
VDD	18	20	Positive power supply.	
NC	X	10	No Connecting	
NC	X	11	No Connecting	

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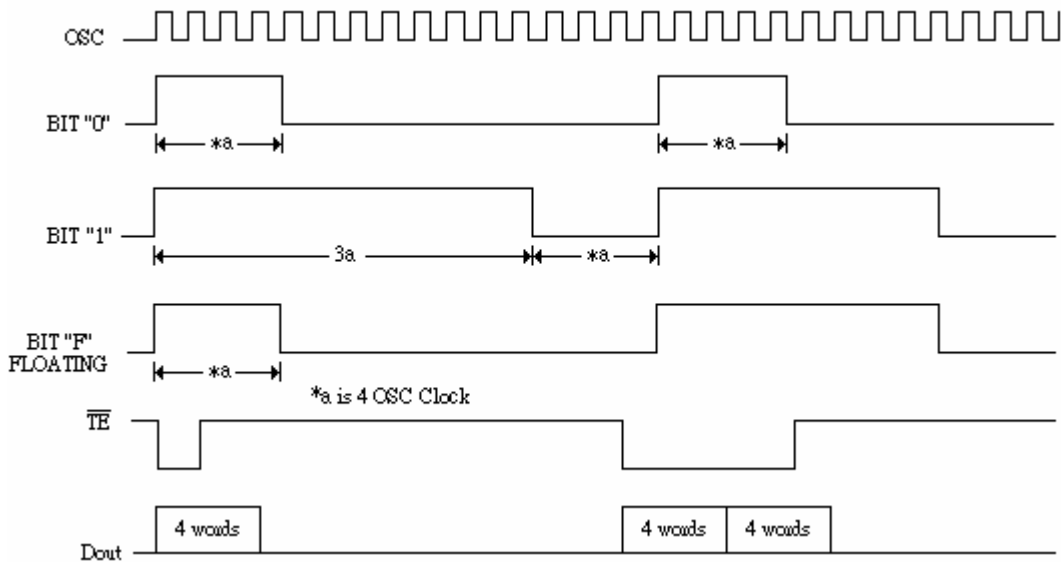
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Block Diagram



Function Description

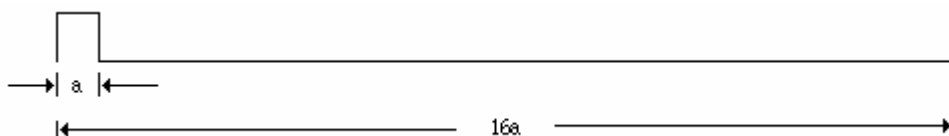
1. Data Format



TE is active low signal. When TE is "low", Dout will output 4 words. If time in "low" is longer than the 4 words transmission time, Dout will continuously output a second 4 words data.



Synchronization Bit waveform is :



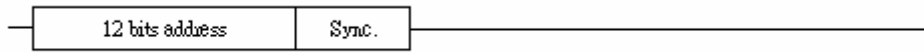
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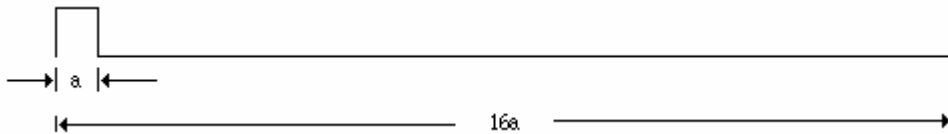
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2. Frame Format

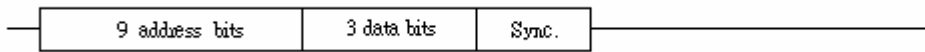
When HK532 is used for no data, transmitting format is:



Synchronization Bit waveform is :



When data type of HK532 is used, address bits will decrease accordingly. For example, in 3 data type where address is 9 bits, transmitting format is:



HK532/HK532A has 12 bits including a maximum of 6 data bits.

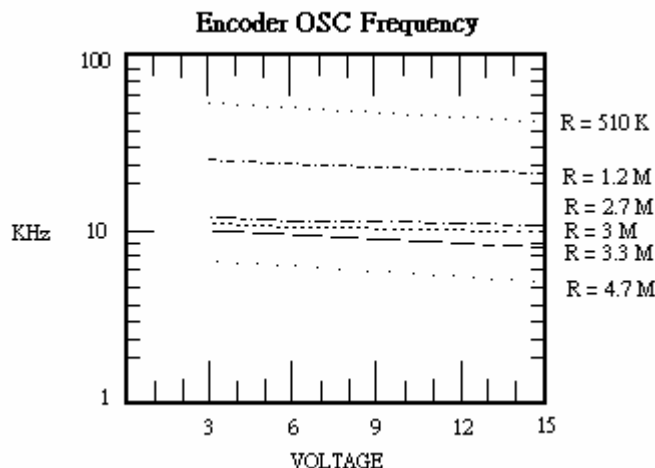
first transmission bit
in real signal A0 will be receive first.

A0	A1	A2	A3	A4	A5	A6/D5	A7/D4	A8/D3	A9/D2	A10/D1	A11/D0	Sync.	According to
A0	A1	A2	A3	A4	A5	D5	D4	D3	D2	D1	D0	Sync.	HK532A / HK532AM
A0	A1	A2	A3	A4	A5	A6	D4	D3	D2	D1	D0	Sync.	HK532A - 5 / HK532AM - 5
A0	A1	A2	A3	A4	A5	A6	A7	D3	D2	D1	D0	Sync.	HK532A - 4 / HK532AM - 4
A0	A1	A2	A3	A4	A5	A6	A7	A8	D2	D1	D0	Sync.	HK532A - 3 / HK532AM - 3
A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	D1	D0	Sync.	HK532A - 2 / HK532AM - 2
A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	Sync.	HK532AF

※ HK532A - x (Latch Type) , HK532AM - x (Momentary Type)

4. OSC Frequency

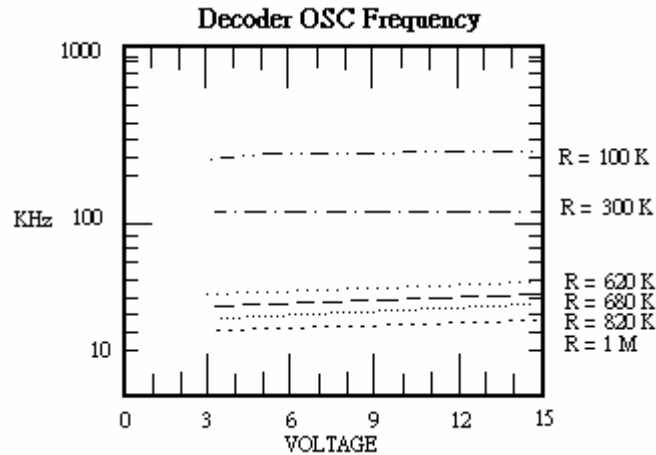
HK532's oscillator can be constructed by connecting a resistor between OSC1 and OSC2 pin. HK532A's OSC frequency must be 2.5 to 8 times more than HK532.



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Suggested oscillator resistor of HK532 & HK532A-x (HK532AM-x) series :

HK532	HK532A-x series
4.7 M	820K
3.0M	620K
2.2M	300K
1.2M	180K

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	$V_{DD} - V_{SS}$		-0.3~16	V
Input Voltage	$V_I - V_{SS}$		$V_{SS} - 0.3 \sim V_{DD} + 0.3$	V
Output Voltage	$V_O - V_{SS}$		$V_{SS} - 0.3 \sim V_{DD} + 0.3$	V
Maximum power dissipation	P_a	$V_{DD} - V_{SS} = 12V$	500	mW
Operating Temperature	T_{opr}		-20~70	°C
Storage Temperature	T_{stg}		-40~125	°C

DC Electrical Characteristics

Parameter	Symbol	Test Condition	Limits			Unit
			Min.	Typ.	Max.	
Supply Voltage	V_{DD}		3		12	V
Supply Current	I_{SB}	$V_{DD} = 12V$ OSC STOP A0 – A11 Open		0.02	0.3	mA
Output Drive Current (I_{out})	I_{OH}	$V_{DD} = 5V$ $V_{OH} = 3V$	3			mA
		$V_{DD} = 8V$ $V_{OH} = 4V$	6			
		$V_{DD} = 12V$ $V_{OH} = 6V$	10			
	I_{OH}	$V_{DD} = 5V$ $V_{OL} = 3V$	2			mA
		$V_{DD} = 8V$ $V_{OL} = 4V$	5			
		$V_{DD} = 12V$ $V_{OL} = 6V$	9			

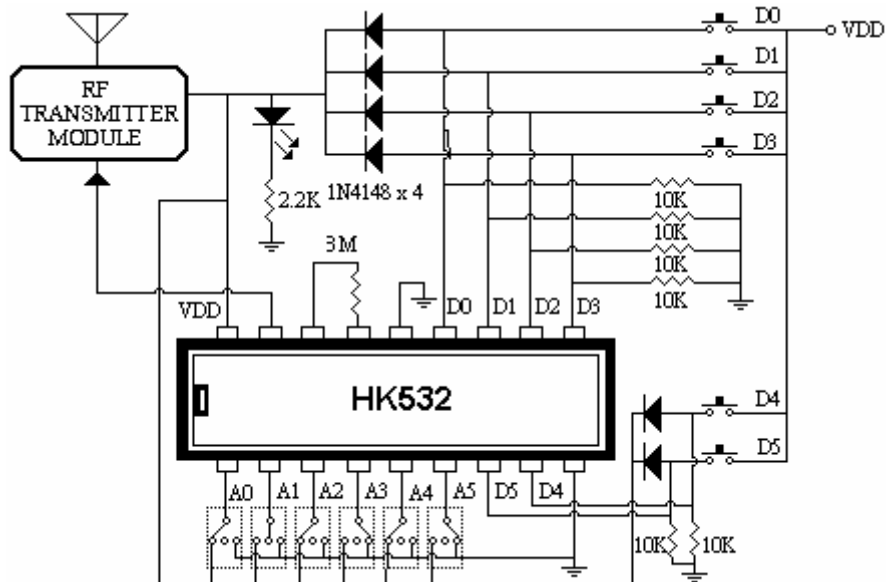
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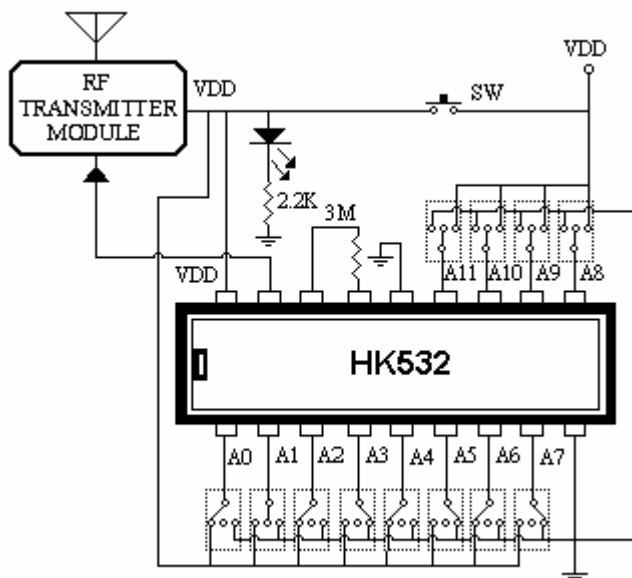
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Application Circuit

(A) 6 Data transmitter circuit



(B) Full address transmitter circuit with zero data



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RF module application circuit for reference only

